GMset

MV Gas Insulated Switchgear up to 24 kV
1. SF6-insulated busbar compartment
2. Low voltage compartment
3. Three-position disconnector
4. Disconnector switch operating mechanism
5. Cable earthing operating mechanism
6. Voltage indicators
7. SF6-insulated circuit breaker compartment
8. SF6 circuit breaker
9. Circuit breaker opening closing push-buttons
10. SF6 pressure gauge
11. MV cable bushing connectors
12. Current transformers
13. MV plug-in cable connections
GMset, safety

Operator safety
GMset is equipped with a comprehensive range of mechanical and electrical operating safety devices which prevent any wrong operations. In addition, all operating devices can be fitted with key-locks or padlocking features according to customers’ needs.

GMset also benefits from high-performing fibre optic voltage indicators located on the front of the unit to guarantee maximum personnel safety.

GMset has been granted full internal arc certification according to the IEC 60298 standard, annex AA, criteria 1 to 6, Class A accessibility.

Equipment safety
GMset benefits from a worldwide leader’s substantial experience in the protection field, in both breaking and fault detection.

This means the accuracy and reliability of digital techniques applied to protection and monitoring.

It also means equipment self-diagnosis, notifying the user of failures before they result in faulty operation.

GMset, continuity of service

GMset offers the guarantee of equipment developed in compliance with international standards, and the benefit of Merlin Gerin’s well-proven techniques and accumulated experience in the field.

Reliable solutions

- Complete insensitivity to environmental conditions due to full SF6 insulation,
- The lastest generation of SF6 circuit breakers developed with Merlin Gerin’s 25 years of accumulated experience,
- Sepam digital protection and control system with diagnosis capabilities and reliable devices designed according to FMECA methods (Failure Mode Effects and Criticality Analysis),
- Highly reduced maintenance,
- Fully type-tested equipment,
- Quality organization in accordance with ISO 9001 standards.
GMset
SF6-insulated MV switchgear

GMset, functional units
GMset is a range of functional units suitable for all kinds of applications.

Functional units
- Line incomer,
- Line feeder,
- Switchboard coupler,
- Capacitor feeder,
- Transformer incomer,
- Transformer feeder,
- Bus sectionalizing,
- Busbar voltage metering.

Description of functional units.
Each functional unit consists of
- A busbar compartment, filled with SF6, containing:
  - main busbar,
  - three-position disconnector.
- A line compartment, filled with SF6, containing:
  - SF6 circuit breaker,
  - earthing switch (option),
  - resistive voltage transformer (option),
  - MV bushing connectors.
- A cable box compartment containing:
  - MV plug-in cable connections according to the EN50181 standard,
  - toroidal current transformers,
  - inductive voltage transformers (option),
  - surge arresters (option).
- A low voltage compartment containing the protection, control and signalling equipment.
GMset
SF6-insulated MV switchgear

GMset, the most advanced solution

Sepam range
Sepam is a range of easy-to-operate multi-function units which use digital technology and display data on an alphanumeric screen. Each Sepam provides the best solution for a specified application, including all the requested protection, metering, control and monitoring features.

Sepam’s communication function allows a switchboard equipped with GMset to be integrated in a network remote control system.

The Sepam range includes:
- Sepam 2000 for all protection, metering, control and monitoring functions,
- Sepam 100 LA for self-powered back-up and earth fault protection of transformer incomers.

Fibre optic detection system
An optical fibre voltage indicator (PTO) guarantees the maximum insulation level.

The compartments that house high voltage parts are filled with SF6 at the operating pressure of 0.015 MPa rel.

The switchgear is however designed to grant the rated insulation level (50kV x 1 min, 125kV impulse) even if the SF6 pressure drops to atmospheric pressure.

Each compartment is individually monitored by a temperature compensated device equipped with contacts to signal SF6 pressure level.

Two different devices can be supplied:
- mechanical temperature compensated pressure gauge equipped with:
  - contact for 1st low pressure alarm,
  - contact for 2nd low pressure alarm,
  - contact for overpressure,
  - monitor to indicate the value of the gas pressure inside the compartment which would occur at an ambient temperature of 20 °C.
- electronic temperature compensated pressure gauge.

The device monitors the pressure by means of special sensors which measure pressure and temperature, providing the gas density value via a CPU.

It is equipped with:
- contact for 1st low pressure alarm,
- contact for 2nd low pressure alarm,
- contact for overpressure,
- self-diagnosis contact.
**GMset**

**SF6-insulated MV switchgear**

### General characteristics

The values below are given for normal operating conditions as defined in IEC 60298 and 60694.

<table>
<thead>
<tr>
<th></th>
<th>12</th>
<th>24</th>
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</thead>
<tbody>
<tr>
<td><strong>rated voltage (kV)</strong></td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td><strong>rated insulation level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>power-frequency withstand voltage (kV) rms</td>
<td>28</td>
<td>50</td>
</tr>
<tr>
<td>lightning impulse withstand voltage (kV) imp</td>
<td>75</td>
<td>125</td>
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<tr>
<td><strong>rated normal current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>busbar (A)</td>
<td>1250</td>
<td>1250</td>
</tr>
<tr>
<td>2500</td>
<td>2500</td>
<td></td>
</tr>
<tr>
<td>functional units (A)</td>
<td>630</td>
<td>630</td>
</tr>
<tr>
<td>1250</td>
<td>1250</td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td>2500 (1)</td>
<td></td>
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<tr>
<td><strong>short time withstand current (kA/3 sec)</strong> (2)</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td><strong>short circuit breaking current (kA)</strong></td>
<td>16</td>
<td>16</td>
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<tr>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td><strong>Internal arc withstand (kA/1 sec)</strong></td>
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<td>25</td>
</tr>
<tr>
<td><strong>SF6 gas pressure at 20 °C (MPa) relative</strong></td>
<td>0.015</td>
<td>0.015</td>
</tr>
<tr>
<td><strong>standard degrees of protection</strong> (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF6 filled compartment</td>
<td>IP65</td>
<td>IP65</td>
</tr>
<tr>
<td>enclosure</td>
<td>IP3X</td>
<td>IP3X</td>
</tr>
<tr>
<td>internal partitions</td>
<td>IP2XC</td>
<td>IP2XC</td>
</tr>
</tbody>
</table>

(1) two units in parallel, please consult us.
(2) the short-circuit making current is equal to 2.5 times the short time current.
(3) standard degree of protection, for other values, please consult us.

### Dimensions (mm) and approximate weights (kg) by type of cubicle

<table>
<thead>
<tr>
<th></th>
<th>AD1</th>
<th>AD2</th>
<th>CL1</th>
<th>CL2</th>
<th>TT1</th>
<th>TT2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>width (mm)</strong></td>
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<td>1000</td>
<td>1000</td>
<td>1500</td>
<td>500</td>
<td>500</td>
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<tr>
<td><strong>height (mm)</strong></td>
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<tr>
<td><em><em>depth</em> (mm)</em>*</td>
<td>1150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>weight (kg)</strong></td>
<td>500</td>
<td>1000</td>
<td>700</td>
<td>1200</td>
<td>350</td>
<td>250</td>
</tr>
</tbody>
</table>

(1) Back to wall: 1150mm. Free standing: 1180mm.
GMset
SF6-insulated MV switchgear

GMset, the solution
GMset is indoor, Gas Insulated Switchgear, designed for the MV section of HV/MV and MV/MV substations.

Customers’ requirements
GMset is designed to meet users’ requirements:
- space and installation cost savings,
- safety of operating personnel,
- reliability allowing continuous power supply.

GMset, optimization of your global investment

Floor space savings
GMset’s integral SF6 insulation enables extensive switchboard installation space savings, compared to air-insulated solutions. All GMset operations and maintenance are carried out from the front of the unit. GMset is therefore suitable for mounting against a wall, allowing further savings, with easy access to the MV cable compartment.

Suitable for retrofitting
GMset’s reduced overall dimensions make it appropriate for retrofitting applications, with minimal impact on the civil structure.

Modular, adaptable solutions
GMset is a complete range of standardized functional units which can be easily adapted to fit users’ requirements.

GMset
up to 24 kV
from 630 A to 2500 A
up to 25 kA